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## WE CLAIM:

1	1. A method for generating computer system level architectures that are		
2	capable of executing multiple functional specifications, given a set of physical resources,		
3	and subject to a set of design constraints, the method comprising:		
4	forming an initial master task graph from said multiple specifications, said		
5	initial master task graph including at least one hierarchical task having pointers to a		
6	plurality of sub-task graphs, and at least one attribute selected from a group comprising		
7	an AND attribute and an XOR attribute;		
8	processing said initial master task graph to provide a selected number of		
9	final master task graphs, each of said final master task graphs comprising a list of AND		
0	task graphs;		
1	generating a family of architectures for each of said final master task		
12	graphs, each of the architectures generated for a given final master task graph being		
13	capable of executing every AND task graph included in the list for the given final master		
14	task graph; and		
15	exploring each of said generated architectures for use in executing said		
16	multiple specifications.		
1	2. The method of Claim 1 wherein:		
1	2. The method of Claim 1 wherein:		
2	said initial master task graph includes a first hierarchical task having an		

AND attribute, and a second hierarchical task having an XOR attribute.

3

resources.

1	3.	The method of Claim 2 wherein said processing step comprises:	
2		resolving said initial master task graph into sets of AND task graphs on	
3	the basis of re	spective sub-task graphs associated with said first hierarchical task; and	
4		resolving said sets of AND task graphs into said final master task graphs.	
1	4.	The method of Claim 1 wherein:	
2		said given final master task graph is applied to an architecture synthesis	
3	engine to generate a family of architectures therefor.		
1	5.	The method of Claim 1 wherein said exploring step comprises:	
2		placing each of the architectures generated for said given final master task	
3	graph into a pool; and		
4		retaining a particular architecture in said pool only if said particular	
5	architecture c	an execute each AND task graph of said given final master task graph in	
6	accordance w	rith a prespecified time schedule.	
1	6.	The method of Claim 1 wherein:	
1	υ.		
2		a generated architecture is disposed to execute specified multiple tasks	

from said task specifications on a single component that is selected from said set of

1	7. The method of Claim 1 wherein:
2	a generated architecture is disposed to execute specified multiple tasks
3	from said task specifications on the same type, but different instances, of a component
4	that is selected from said set of resources.
1	8. An article of manufacture for generating system level architectures that
2	are capable of executing multiple functional specifications, given a set of physical
3	resources, and subject to a set of design constraints, said article of manufacture
4	comprising:
5	a computer readable medium;
6	a plurality of instructions wherein at least a portion of said plurality of
7	instructions are storable in said computer readable medium, and further wherein said
8	plurality of instructions are configured to cause a processor to:
9	form an initial master task graph from said multiple specifications,
10	said initial master task graph including at least one hierarchical task having pointers to
11	a plurality of sub-task graphs, and at least one attribute selected from a group comprising
12	an AND attribute and an XOR attribute;
13	process said initial master task graph to provide a selected number
14	of final master task graphs, each of said final master task graphs comprising a list of
15	AND task graphs;
16	generate a family of architectures for each of said final master task
17	graphs, each of the architectures generated for a given final master task graph being
18	capable of executing every AND task graph included in the list for the given final master
19	task graph; and

4	20	explore each of said generated architectures for use in executing			
	21	said multiple sp	pecifications.		
	1	9.	The article of manufacture of Claim 8 wherein:		
	2	S	said initial master task graph includes a first hierarchical task having an		
	3	AND attribute,	and a second hierarchical task having an XOR attribute.		
	1	10.	The article of manufacture of Claim 9 wherein said processing step		
	2	comprises;			
	3	1	resolving said initial master task graph into sets of AND task graphs on		
	4	the basis of resp	pective sub-task graphs associated with said first hierarchical task; and		
-	5	1	resolving said sets of AND task graphs into said final master task graphs.		
AND STREET	1	11.	The article of manufacture of Claim 8 wherein:		
T Mark II	2		said given final master task graph is applied to an architecture synthesis		
Mr. Sharif	3	engine to gener	rate a family of architectures therefor.		
	1	12.	The article of manufacture of Claim 8 wherein said exploring step		
	2	comprises:			
	3		placing each of the architectures generated for said given final master task		
	4	graph into a po	ol; and		
	5		retaining a particular architecture in said pool only if said particular		
	6	architecture car	n execute each AND task graph of said given final master task graph in		
	7	accordance wit	h a prespecified time schedule.		

1	13.	The article of manufacture of Claim 8 wherein:
2		a generated architecture is disposed to execute specified multiple tasks
3	from said task	specifications on a single component that is selected from said set of
4	resources.	

- 1 14. The article of manufacture of Claim 8 wherein:
- 2 a generated architecture is disposed to execute specified multiple tasks
- 3 from said task specifications on the same type, but different instances, of a component
- 4 that is selected from said set of resources.